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ROYAL GARDENS, KEW.

BULLETIN

OF

MISCELLANEOUS INFORMATION.

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CLXXVII.—CULTURAL INDUSTRIES AT THE GAMBIA.

In the *Kew Bulletin* for June 1889 an account was given of the attempts which had been made, mainly through the initiative of the Administrator, Mr. Gilbert T. Carter, C.M.G., to develop agricultural industries at the Gambia.

The following letter affords striking evidence of the almost insuperable physical difficulties which stand in the way of any permanent success in this enterprise. It must be regarded as pretty conclusively established that any value the British Settlement at the Gambia possesses must depend upon the trade of which it is the centre, and that little trade can ever be entertained of turning its independent resources to much profitable account.

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1890.

Price Twopence.

The Administrator of the Gambia to Royal Gardens, Kew.

Government House, Gambia,
9th October 1890.

Dear Sir,

I am sorry to say that my experiments have not been a success during the past rainy season owing to an abnormal rainfall of 60 inches up to the present date as against 32 inches for the whole of last year, that is to say for 3½ months. As a rule showers begin about the middle of June, but the heavy rains do not occur until a month later, during August and September there is more or less continuous rain but this is the end of it, and, beyond a few showers, there is seldom any more of consequence.

On the 29th July 4·04 inches fell in two hours, and you can realise what this means, on a flat surface varied by occasional depressions in no particular direction; the soil is fortunately sandy and absorbent, but naturally strikes at 4 inches in two hours, and my grounds of course became a series of lakes. I had a quantity of Castor oil plants down, but they all died. The Ceará rubbers have survived, but they threatened dissolution, and I very much feared for them. However, if they will stand this soaking and the long drought (which I know that they will do) the tree will be a great acquisition to us. I have introduced them to Combo, where they are doing well, and I hope also to the Ceded Mile, but I have had no accounts from these yet.

I planted two lots of Egyptian cotton, one in an enclosure under my own supervision and the other outside in the natural soil; the latter were in charge of the labourers who knew something of the culture of cotton on native principles. My own plants in the early stages developed splendidly, but when they commenced to flower, for some reason the leaves commenced to wither at the edges as if they had been burnt; the younger shoots were attacked by *Pyralidæ*, and the pods when they formed got riddled by beetles. I doubt if I shall get a single matured sample of cotton to send you.

The plants in charge of the men came up very weedy, and when they got to about 4 inches in height died off, but the soil is miserably poor, and I hardly expected any other result. I am sure nothing can be done with the greater portion of the Government House Grounds without draining and manuring.

Sir A. Moloney, amongst other things, sent me some seeds of *Cassia florida*. These have done very well, and the soil, such as it is, seems to suit the tree. Two species of *Bauhinia* which I tried came up very well, but failed at an early stage. There is, however, a species which is common in Combo, but I am not sure which it is.

I understand that a London firm is prepared to expend capital in an endeavour to develop the Gambia woods, and also to experiment in agriculture; it has applied for a large tract of land in the Ceded Mile, where there are numbers of very fine "mahogany" and rosewood trees, besides plenty of ground fit for cultivation. It will have every encouragement from me. I am quite sure tobacco would be a paying crop here if worked by someone who understood its culture. The rubber industry might be indefinitely extended. Besides the Ceará tree, Landolphias flourish luxuriantly in many parts, and I saw several vines on my recent visit to Albreda and Sicca. I regard coffee as hopeless in the lower river; the soil is not sufficiently rich, except, perhaps, in a few places, and eight months drought would, I fancy, try the most long suffering plant. Rice might, of course, be grown to any extent, but the

natives cannot be encouraged to grow it for export. Indian rice comes to us too cheaply. It can be bought here at about 15*s.* a cwt.

There is a sentimental objection to taxing food stuffs. In a case of this kind, however, a tax on imported rice would compel an indolent race to work, either to grow the article or earn more money wherewith to pay for the rice which is imported for it.

We have had a most unhealthy season. I lost one European officer on the 1st October, and invalided another on the 8th; there is only one other left besides myself, and he, fortunately, is the Colonial surgeon. For some unexplained reason I have had better health than usual.

Believe me, &c.

The Director, (Signed) G. T. Carter.
Royal Gardens, Kew.

By the West African agreement between Great Britain and France of August 10, 1887, a frontier line between the English and French possessions was established. In accordance with its provisions a Special Commission of Delimitation was appointed to trace upon the spot the line of demarcation between the English and French territory.

The partition of Tropical Africa amongst European nations has made it more than ever a matter of importance to procure materials for, at any rate, a rough survey of its botanical resources. It was desirable to use the opportunity presented by the Gambia Delimitation Commission for the purpose. The Colonial Office was, however, unable to find the funds for attaching a botanist to the staff. But they were willing to allow a medical officer to be selected who would do what was possible in the way of botanical exploration. The appointment was accepted by Mr. J. Brown-Lester, M.B., C.M., of the University of Edinburgh. He was supplied with the necessary botanical outfit from Kew, and left Liverpool with the expedition in the S.S. Congo on November 15.

CLXXVIII.—PRODUCTION OF PRUNES IN THE SOUTH OF FRANCE.

The preparation of dried prunes is a very considerable industry in several parts of Europe.

In the valley of the Loire in France, especially about Bourgueil, a small town lying between Tours and Angers, the Prunier de St. Julien (*Prunus domestica*, L. var. *Juliana*, D.C.) is largely cultivated. This is one of the principle sources of supply of the ordinary grocers' prunes.

According to Flückiger and Hanbury (Pharmacographia, p. 252), "The prune in its fresh state is an ovoid drupe of a deep purple hue, "not depressed at the insertion of the stalk, and with a scarcely "visible suture, and no furrow. The pulp is greenish and rather "austere unless the fruit is very ripe; it does not adhere to the stone. "The stone is short ($\frac{7}{10}$ to $\frac{8}{10}$ of an inch long, $\frac{5}{10}$ to $\frac{6}{10}$ broad), broadly "rounded at the upper end. . . . . .

"The fruit is dried partly by solar and partly by fire heat,—that "is to say, it is exposed alternately to the heat of an oven and to the "open air. Thus prepared, it is about $1\frac{1}{4}$ inches long, black and "shrivelled, but recovers its original size by digestion in warm "water."

The production of a somewhat inferior kind of prune is also an important industry in Germany. The following account is from Hanbury and Flückiger (pp. 252, 253).

"When French prunes are scarce, a very similar fruit, known in Germany as *Zwetschen* or *Quetschen*, is imported as a substitute. It is the produce of a tree which most botanists regard as a form of *Prunus domestica*, L., termed by De Candolle var. *Pruneauliana*. K. Koch, *Dendrologie*, part i. (1869), 94, however, is decidedly of opinion that it is a distinct species, and as such he has revived for it Borkhausen's name of *Prunus œconomica*. The tree is widely cultivated in Germany for the sake of its fruit, which is dried as an article of food, but is not grown in England.

"The dried fruit differs slightly from the ordinary prune in being rather larger and more elongated, and having a thicker skin; also in the stone being flatter, narrower, pointed at either end, with the ventral suture much more strongly curved than the dorsal. The fruits seem rather prone to become covered with a saccharine efflorescence."

There is a third centre of the prune industry in south-eastern Europe. This is of increasing importance.

The following account of it is taken from the General Review of the State of the Trade in Servia during the year 1886, by Mr. Vansittart, Chargé d'Affaires at the time at Belgrade (Consular and Diplomatic Reports on Trade and Finance, No. 176).

"The sum total of the value of the export of grain, fruit, and prunes in 1886 is reckoned at 535,476*l.*; of this sum rather more than half represents the value of prunes exported. In 1884 some 20,056,155 kilos., of a value of 274,441*l.*; and in 1885 about 23,228,777 kilos, of a value of 231,000*l.*, were despatched from Servia.

"It is reckoned that one-third is exported direct to Germany, *viâ* Regensburg, one-third direct to America, *viâ* Fiume, and one-third to Pesth, from which latter place prunes are sent to the various European markets. The increase in the exportation of prunes to North America, *viâ* Fiume, should be particularly noticed. Fiume is more advantageously situated than Trieste for this purpose; from the beginning of the season no less than 400 complete waggon-loads were exported per sea, and chiefly to North America.

"The prune harvest for 1886 yielded in Bosnia more than a third of the harvest of the previous year, and can be reckoned at about 170,000 centners; whereas Servia yielded a good average harvest of about 357,832 centners. Of this sum total more than three-fourths were exported. The quality of the new Servian ware was of a very satisfactory nature, the product being healthy, well-dried, considerable in quantity, and of a durable nature. In 1885, a direct trade with Great Britain in prunes was established, and it promises to attain considerable proportions in the future. Prunes are consumed in enormous quantities in Germany, and it is to that country that the great bulk is exported. In England prunes are considered more an article of luxury, and the French "prunes impériales," as sold in the English market, are the favourites, although, perhaps, the Servian prunes, generally smaller than the French plum, possess, if anything at all, a finer flavour, and can certainly be sold at a very much cheaper rate than that at present demanded for the French production. The real reason is, probably, that as prunes are more generally consumed among the richer classes in England, the superior packing, and what may be termed the general making-up of the French "prunes impériales," render them more attractive to the eye, and, in spite of their higher prices, sell better.

"I am told that the export of prunes in general might be benefitted by exporters using for this purpose specially made barrels to contain 100 kilos., or 220 lb. casks."

The kind of prunes more particularly distinguished as "French plums" are a special industry of Southern France. Their mode of preparation and the extreme care bestowed upon it seem to be little known. These were very carefully studied on the spot by Mr. M. W. Colchester-Wemyss, of Westbury Court, Westbury-on-Severn. His object was to ascertain if there was any possibility of starting a similar industry in England. He has very kindly permitted the result of his inquiries to be published in the *Kew Bulletin*.* Though there seems to be little prospect of success in the preparation of prunes or French plums in this country, there seems no reason why it should not be attempted in colonies the climate of which is not dissimilar to that of Southern France. Fruit-growing would be doubtless stimulated in the colonies in proportion to the existence of practicable modes of preserving the crops for commercial purposes.

Fruit-curing in the South of France.

About 60 miles above Bordeaux there falls into the Garonne a fine river which, taking its rise among the mountains of Cevennes, follows a course of some 150 miles until its junction with the Garonne. This river is called the Lot, and the two rivers together confer the name on the Department known as Lot and Garonne. For several miles along the lower reaches of the Lot, and in the country immediately adjacent to the spot where it enters the Garonne, is produced the fruit known, when it has been specially prepared, as "French plums." For over 100 years the industry has been fixed in this locality, and still with the sole exception of a valley in Servia there is no other place where the same trees are cultivated. The tree is called "*Prunier d'ente*"; "enter" is an old French word meaning to graft, and it is simply so called because this particular species was formerly the only plum in this district that ever was grafted. Now there are, practically, no plums other than the "*Prunes d'ente*" grown in the neighbourhood. Higher up the Garonne, round the old town of Agen and in other parts of Southern France, another plum, the "*Prunier commun*" is largely grown, and its fruit treated similarly to that of the "*Prunier d'ente*," but the produce is very inferior and only suitable for stewing; but I believe that nowhere, except in the Servian valley, is the true "*Prune d'ente*" at present grown; and though many experiments have been made with other varieties no others have yet been discovered that will yield the established qualities of the "French plums." It is rather capricious in its growth, for its area of cultivation does not extend very far from the river bank. It appears to delight in a rich alluvial soil of a rather sandy nature, but which contains a sufficiency of clay to make it very retentive of moisture. The centre of the "French plum" district may be said to be at Clairac, a quaint little old-fashioned town built on a steep hill side overlooking the Lot, almost more Spanish looking than French, its houses shaded from the fierce southern sun.

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* A somewhat similar account is given by Mr. George W. Roosevelt, United States Consul at Bordeaux (Reports from the Consuls of the United States, September 1888, pp. 444–448). There is an abstract in the Journal of the Society of Arts March 1889, pp. 328, 329.

with wide outspreading eaves and flower-clad balconies. Here, during a recent stay, I was most hospitably entertained by M. Gajac, one of the most leading merchants connected with the plum trade, with whom I had accidentally become acquainted.

In this and the neighbouring Communes the Metayer system is in full operation, and it appears to work well and harmoniously. The owner of the land engages the Metayer, and supplies all the implements and stock required for the holding; he also keeps the buildings in repair, including the house used by the Metayer. The latter finds the whole of the labour except such extra labour as is needed during harvest time. The Metayer during the year has entire control of the farm, and buys and sells, subject, if required, to the consent of the owner. He renders account of all produce from the holding consumed by himself and family, and at the end of the year the balance of profit is divided equally between the owner and the Metayer. During the last few years the Metayers have fared badly, for the Phylloxera has devastated the vineyards, and sad it is to see acres and acres of land excellent for the growth of grapes, but fit for little else, now deprived of those crops which formerly so well repaid the cost of cultivation. The holdings vary in extent from 10 acres to sometimes 50 and 60, and on every holding in the lowlands are to be seen rows of the "*Prunier d'ente.*" The rows are separated from each other by long strips of cultivated land where the mild fawn-coloured oxen lazily drag the most old-fashioned and primitive implements over the easily broken soil. The plums are long shaped, the end to which the stalk is attached being very much the more pointed; colour red, deepening into a rich violet as the plum ripens; the skin is extremely tough, without being very thick or hard; the flesh very firm containing a large amount of saccharine; the specific gravity much less than that of several varieties of English plums with which I made comparison.

The tree is a very slow grower, requiring 10 years to bring it into full bear, though I saw some trees of six years old, very favourably situated, with a fair crop of fruit on them. The fruit also matures very slowly and is not ripe till all other fruits in the district, apricots, greengages, peaches, have ripened. The plums are picked when just ripe, before the flesh has begun to soften, they are placed on "*claies*" or trays, one layer of plums on each "*claie.*" The "*claies*" are made either of strips of wood or of wicker work, and are either triangular or round. They are a little deeper than the thickness of a plum, so that when not in the ovens they can be safely placed upon each other. The "*claies*" when filled are arranged upon the bottom of the "*fours*" or inside the "*étuves*" and the operation commences. Each homestead has a building in which are placed the "*fours*" and also the "*étuve,*" if the Metayer possesses one. The "*fours*" are simply like very large ordinary bread ovens, they are usually built in pairs, each one about 10 feet long and 4 feet wide; they are heated by burning wood inside them; the ashes are cleared out and the "*claies*" placed inside.

The "*étuves*" are closets of variable dimensions with different appliances for holding the "*claies,*" they have a small furnace with pipes underneath the floor for heating. There seems to be a preference for the "*fours,*" though the "*étuves*" are simpler and more convenient in every way.

When the fresh fruit is put in the temperature should be about 100° F. When the plums have been inside for about a couple of hours, they assume a peculiar puffy appearance; the "*claies*" are then withdrawn, the fruit turned by holding an empty "*claie*" upside

down close over a full one, and then turning them both over. After cooling the "*claies*" are again put into the "*four*," this time at a temperature of about 135°; again withdrawn, turned, cooled and put in at a temperature of about 170°; and this operation is continued until the plums have been dried. Some dry more rapidly than others, and they are picked out as they are ready. The more slowly the operation is performed and the oftener the plums are put into the "*four*" the better will be the result.

When they are ready the plums are sorted out into various grades, according to the number (30, 35, 40, 45, 50, 55 or more up to about 130) that it will take to make up the French pound, for curiously enough the old French measure is adhered to. They are put into sacks and carried to the markets. Here the merchants come and buy, paying prices varying according to the number of plums required to weigh a pound; 30 to the pound would be worth about 120 francs the 100 pounds; 40 to the pound about 100 francs, and so on down to the very lowest grades, which are not worth more than 15 francs. The merchants convey the fruit to large, cool, airy warehouses, where it is thrown into bins, and women at long tables are employed sorting over again much more carefully than before. The various grades are then packed separately into casks and are sent to Bordeaux, where the finer qualities are packed carefully in bottles or boxes, the inferior are simply exported in bulk.

Round Agen and in the other districts another tree is cultivated, the "*Prunier commun.*" This is a round violet plum grown on its own stock. The fruit is prepared in a similar manner to the "*Prune d'ente,*" but it is very inferior and is only fit for stewing. Enormous quantities are consumed by the peasants in the north and east of France.

I think the deductions I have drawn from the observations and inquiries I have made may be briefly stated as follows:—

1. That we have no plum at present cultivated in the Severn district that at all resembles the "*Prune d'ente.*"

2. That though I think we have plenty of suitable soil I think it most probable that we should never successfully cultivate the "*Prune d'ente*" on account of the lateness of our spring and the comparatively small amount of really hot sun that we usually enjoy.

3. That some of our plums can be made to yield lower grades of "*prunes*" and "*pruneaux,*" but with such produce *only*, a factory could hardly be maintained. The loss of weight in the process of drying even with the best "*prunes d'ente*" amounts to two-thirds of the original weight; with our plums it would probably be about three-quarters. In other words a pot of our plums would probably yield about 25 pounds of dried fruit.

If a factory were established, I should propose to adopt a class of kiln which I have in use for burning terra cotta at my brickworks. I should have a set of four of these kilns, each kept constantly at a regular temperature, but the heat in each one varying from that in the others. Such a set, in a suitable chamber and with the requisite heating arrangements, would probably cost about 200*l.*; not so much if placed in an existing building; and the daily output would amount to the produce of from 30 pots of fresh fruit, all of which would pass through all four kilns. There could not be more than about six weeks of work, and the gross output would, therefore, be about 250 pots of *dried* fruit during that time.

It will be seen that during the greater part of the year the factory would be idle unless development in other directions were adopted.

I could indicate one such direction as to which I have obtained a considerable amount of information, and which appears to offer very great probabilities of success. It would make this report too lengthy were I to enter fully into the details of this scheme; and I will only mention that it is the manufacture of brandy from plums, adding that:—

i. There appears to be an unlimited demand for brandy.

ii. That plum brandy appears to possess distinctive and valuable qualities.

iii. That recent legislation in Germany, where most of the cheap brandy is made, has rendered its manufacture in England more advantageous.

iv. That such a manufacture would considerably extend the period during which the factory would be at work.

v. That the worst, soiled, and damaged fruit might be usefully employed.

Again, the manufacture of jam would enlarge the field of operations and extend the period of work; and not only of jam, but of fruit prepared in various ways.

I propose to try experiments in drying all the varieties of plums grown in any quantity in the district, and we can then form an idea of the quality of the product, and can ascertain the probable quantity available of such varieties as show fairly good results.

In using the word jam above I meant to include in the phrase the various products more or less included under the French term "*confitures*," and in mentioning 30 pots as output from suggested "*fours*" I should say this is purely guesswork, except that it would certainly be this amount, but it might be three or four times as much. I shall try the experiments, as soon as any plums are ripe, with my kiln at the brickworks, and I can then form a reliable opinion.

(Signed) M. W. Colchester-Wemyss.

August 1888.

In giving permission for the publication of his paper in the *Kew Bulletin* Mr. Colchester-Wemyss was good enough to send another paper which he prepared for a meeting of fruit-growers at Gloucester, and in which he gave the following results of some experiments with English plums:—

I determined, on my return, to make the best attempt I could with our Westbury plums. Unfortunately it was a most unfavourable season (1888) for the experiment, for the fruit in England never ripened properly, and the continued absence of warm sunshine reduced to very small proportions the amount of saccharine, an ingredient most vitally necessary; so that the experiment was made under avowedly unfavourable auspices.

I have at my brickworks at Mitcheldean a special kiln for burning pottery and terra-cotta. This kiln has some points of similarity with a French fruit "*étuve*," only much better. It is fired with a special gas produced on the spot, the flame circulates in a hollow wall round the kiln, but never enters it. It can be cut off at any moment, and the temperature regulated at will. Of course, being made for terra-cotta, its shape and form is not convenient for drying plums; but it afforded ample evidence that kilns built on this principle, but specially modified, would answer admirably for fruit-drying purposes. I tried several kinds of plums, amongst others the Early Prolific, Blaisdon Red, Victoria, Black Apricot, and Black Diamond, but every plum I tried as deficient in all the three characteristics of the *Prune d'ente*,

toughness of skin, solidity of flesh, and abundance of saccharine. Some failed altogether, and even those which yielded a moderately fair result had to be treated with extraordinary care to avoid the bursting of the skin and consequent escape of juice.

They had to be put many times into the kiln, and the finishing temperature had to be arrived at very gradually, and even then I unfortunately spoilt, from a too high temperature, several "*claie*"-fuls of plums which I was preparing in an ordinary bread oven at Westbury. The plum season was a short one this year, and unless picked quite green, so many rotted before they were really ripe, owing to the damp and rain, so that with the time and means at my disposal I was only able to produce a very limited number of plums. Those giving the best results were the Blaisdon Red, the Black Diamond, and the Victoria.

* * * *

Though none of our existing plums will yield the best French plums, we can produce "Pruneaux," which are not without merit. Whether it would be a lucrative operation is not an easy question to answer. We have to bear in mind that it will require nearly 4 lbs. of our home varieties to make 1 lb. of "Pruneaux." In other words, assuming the value of the raw fruit to be 1*d.* per pound, it would take four pennyworth of fruit to make a pound of "Pruneaux"; and I think this would have to sell at 5*d.* per lb. to make the manufacture profitable.

A factory could not be started solely for the manufacture of "Pruneaux," because the busy time would only be so small a portion of the whole year, that it could hardly be rendered remunerative; moreover, the raw fruit would bear but little travelling, and so could not well be brought from any great distance. It has to be quite ripe, and yet must not be at all bruised, and the skin must not be the least broken. A factory might encourage the erection and maintenance of ovens and kilns in different localities, and in fact the earlier stages of manufacture might be carried out in such localities themselves, and the process be subsequently completed at the factory. Such a plan would also have advantage of extending the annual period of life at the factory. It might also be possible to store the raw fruit in cool chambers at the factory and dry it at leisure, but I doubt this. A factory in fact to be successful must embrace other operations besides drying plums.

CLXXIX.—CULTIVATION OF PERFUMERY PLANTS IN THE COLONIES.

Inquiries being from time to time addressed to Kew on the subject of the cultivation of Perfumery plants in British Colonies, the following correspondence relating to such a project in South Australia is published for convenience of reference.

ASSISTANT AGENT-GENERAL FOR SOUTH AUSTRALIA to ROYAL GARDENS, KEW.

8, Victoria Chambers, Westminster,
August 8, 1888.

SIR,

I AM directed to forward to you the enclosed copy of a Despatch which has been received from the Government on the subject of the cultivation of scent and medicinal plants, &c., and the possibility of establishing a trade with England in the produce; and the Agent-General desires me to say that he would esteem it a kindness if you would favour him with your valuable advice, and any information you

may possess on the subject that will enable him to reply to the inquiry made on behalf of the Agricultural Bureau.

I am, &c.

(Signed) SAMUEL DEERING,
Assistant Agent-General.

W. T. Thiselton Dyer, Esq., C.M.G., F.R.S.,
Director, Royal Gardens, Kew.

GOVERNMENT OF SOUTH AUSTRALIA to Sir ARTHUR BLYTH, K.C.M.G., C.B.

South Australia, Office of the Treasurer,
Adelaide, July 2, 1888.

SIR,

I HAVE the honour to inform you that at a meeting of the members of the Agricultural Bureau the possibility of growing scent and medicinal plants profitably was discussed, and having ascertained that a market cannot be obtained in this Colony for the produce from them, it was desired that you should be asked to solicit inquiries as to whether a market could be found in England, and it was further desired to endeavour to establish vegetable and flower seed farms here, with a view to encourage the export of seeds, and to further that object they request that quotations of the prices of the import market, together with the duty (if any), may be likewise furnished.

I have, therefore, at the instance of the Honourable the Commissioner of Crown Lands, to request that you will be good enough to obtain and furnish any information you can on the subject, as desired by the Agricultural Bureau.

I am, &c.

(Signed) L. H. SHOLL,
Under Treasurer,
pro Treasurer.

Sir Arthur Blyth, K.C.M.G., C.B.,
Agent-General for South Australia,
London, S.W.

In order to obtain the information desired by the Agent-General for South Australia application was made to the well-known authority in the perfumery industry, Mr. Charles H. Piesse, who over a long period of years has always most kindly assisted Kew with information which it would have been difficult to have procured from any other source.

EXTRACT of letter from Mr. CHARLES H. PIESSE to ROYAL GARDENS, KEW, dated 2, New Bond Street, London, October 10, 1888.

The question as to the probability of establishing a trade in perfumery plants between this country and the Australian Colonies is one which could better be discussed *viva voce* than by letter, as there is a good deal to say about it.

There is always a market here for the "*Matières premières*" used in perfumery, and I will refer only to those of vegetable origin. These are scented woods, attars or essential oils, and the so-called pomades, which consist of a solid fat, saturated with the odours of certain flowers. The essential oils, being the most easily procured, since they are obtained by distilling with water, the odoriferous protion of the plant, and this I should say was the most likely mode of a successful beginning, for the trade. For besides the essential oils used in perfumery, this offers the additional advantage that a great many such oils not used in perfumery, but used very largely in medicine, and in confectionery are to be obtained in precisely the same way; for example, Mint,

Peppermint, Juniper, Chamomile, Pennyroyal, Thyme, and the like. The odour, which is everything in perfumery, of a given species of plant differs so widely according to climate and soil where the plants are grown, that it is just possible that under no circumstances would the produce of one place be able successfully to compete with that from another. I may illustrate my meaning thus:—Compare the odours of English-grown Lavender with the French or any other, the English is far and away the better, as the price indicates, 50*s.* to 8*s.* per lb. ! So with Rose, that grown in Bulgaria is superior to any other ; and again with Geranium (*Pelargonium capitatum*), that grown in the south of Spain is far better than either French, Algerian, or Turkish.

In regard to the manufacture of pomades skilled labour is essential, and, as you see, involves three different sets of workers, viz., the flower farmers, the men who prepare the fats (a lengthy and tedious process), and the producers of the finished pomades.

I should say that it would be unwise to attempt to produce these (finished products) unless under the supervision of an educated practical man who had worked in the business, and assisted by skilled workmen who would have to be brought from the south of France, which is, so far, the only seat of this industry.

There is no published trade publication devoted to the quotations you mention ; but a good deal of information is scattered through the pages of the *Public Ledger*, published daily at 6, St. Dunstan's Passage, Great Tower Street, E.C. Some information is also to be found in the "Art of Perfumery" (upon a new edition of which I am now engaged), section xx., page 449. I will obtain for you price lists of various wholesale dealers in these kinds of materials, if you so desire. I regret that no record has been kept of the Australian journey of my brother, and no report has been published of the perfumery question, to which he devoted considerable attention.

(Signed) Charles H. Piesse.

J. R. Jackson, Esq., Kew.

Agent-General for South Australia to Royal Gardens, Kew.

8, Victoria Chambers, Westminster,
6th November 1888.

Sir,

I have the honour to acknowledge the receipt of your letter of the 3rd instant, in continuation of your letter of the 8th August, on the subject of the request of the South Australian Agricultural Bureau to be furnished with information regarding the possibility of establishing a market here for scent and medicinal plants, also for vegetable and flower seeds, the products of the Colony.

I thank you, in the name of the Government that I represent, for your valuable communication and suggestions.

The latter I shall act upon without delay, and I earnestly hope that some good results will accrue from them.

I have, &c.

(Signed) Arthur Blyth.

W. T. Thiselton Dyer, Esq., C.M.G., &c.,
Royal Gardens, Kew.

Reference may also be made to reports on the same subject in the "Reports from the Consuls of the United States" for September 1886 and April 1889.

CLXXX.—BANANA DISEASE IN FIJI.

The cultivation of bananas in the colony of Fiji for the purpose of exporting the fruit has during late years made more rapid strides. Unfortunately a disease has appeared amongst the banana plantations.

The following correspondence relates to the subject:—

COLONIAL OFFICE to ROYAL GARDENS, KEW.

SIR, Downing Street, 10th November 1890.

I AM directed by Lord Knutsford to transmit to you a copy of the Report on the Fiji Blue Book for 1889, and I am to call your attention to the remarks at page 28 as to the disease which has appeared among the banana plantations.

Lord Knutsford would be glad if you could furnish the Governor with any information likely to be of use in combating this disease.

I am, &c.

The Director, (Signed) JOHN BRAMSTON.
Royal Gardens, Kew.

EXTRACT from the Report on the Fiji Blue Book for the Year 1889.

This year shows the highest export of green fruit, but this trade has not during the past year advanced in volume at the same rate as in previous years. The quantity of bananas exported is now considerably over half a million bunches per annum, and in the Colony the trade may be said to have been gathering strength, the cultivation of the banana being now reduced to a science. A disease has appeared among banana plantations during the past six or seven years, and would make rapid strides but for the persistent watchfulness of the growers. No reliable cure for the banara disease has yet been found, but inquiry and experiment are still going on.

TABLE showing the Quantities of Bananas exported from Fiji during the Years 1886–1889.

Bananas.	Years.			
	1886.	1887.	1888.	1889.
No. of bunches - -	261,741	359,294	517,666	531,008

ROYAL GARDENS, KEW, to COLONIAL OFFICE.

SIR, Royal Gardens, Kew, November 13, 1890.

I HAVE the honour to acknowledge the receipt of your letter of November 10, asking for information likely to aid the Government of Fiji in combating the banana disease, which is stated to exist in the colony.

2. From the information given me by a planter, who recently called here, as to the export of the fruit, I do not think the disease can at present have obtained very serious dimensions.

3. I have no exact information as to the precise nature of the disease, but I apprehend that it is probable that it is the same as that which has been found troublesome in Queensland.

4. The Queensland disease has been investigated by Joseph Bancroft, M.D., an able scientific man residing in Brisbane. He kindly sent to Kew a copy of a lecture, published apparently in 1879, "On the Diseases "of Animals and Plants that interfere with Colonial Progress." He attributes the disease to a nematoid worm, a minute parasite which attacks the roots. It is no doubt stated correctly to be allied to the well known paste eel, *Anguillala*. It might be worth while for the Governor of Fiji to obtain a copy of this lecture.

5. Dr. Bancroft calls the disease the *Flask-worm disease*, and he states that "ploughing up and summer fallow ought to kill the parasite." Many plants, such as the carnation, suffer severely from a similar disease at Kew, and we find that no remedy is so efficacious as changing the ground from time to time.

6. In the *Fiji Times* for August 17, 1889, it is stated that Messrs. Peat Bros. and Moore, of Tuvumila, Vanua Levu, have accidentally discovered that diseased banana plants might be restored to health by cutting down, stirring the ground, and pouring one to four buckets of sea-water over each.

7. In the issue of the same paper for December 14, 1889, Sir Ferdinand van Mueller, adopting the view that the disease is produced by a nematoid worm, recommends, failing success with various insecticides, ploughing the land, leaving it fallow, and alternating some other crop. The ground should subsequently be replanted from an unaffected locality. This appears judicious advice, and I am not aware that with our present knowledge of the subject there is anything else to recommend.

I am, &c.

(Signed) W. T. THISELTON DYER.

John Bramston, Esq., C.B.

CLXXXI.—FIBRE PRODUCTIONS IN THE CAICOS.

The Turks and Caicos Islands lie between 21° and 22° N. lat. and 71° and 72° 37′ W. long. Their area is 169 square miles. The most important island, Grand Turk, is 2½ miles long and 2 miles broad. It contains 2,500 inhabitants, being half the total population.

These islands were originally settled from Bermuda in the 18th century, and formed at first a portion of that colony. In 1799 they were transferred, for purposes of government, to the colony of the Bahamas, to which group they geographically belong. In 1848 they

were made independent of the Bahamas, and were placed under the Governor of Jamaica, an arrangement which still continues.

Salt-making is the only industry of any importance, the quantity annually gathered exceeding 1½ million bushels. Sponges are found in some quantities on the Caicos bank, but are chiefly collected by Bahamas schooners and carried to Nassau. There is one sponge-curing establishment on the Caicos Islands. The cultivation of the Manila fibre (or Pita plant) is being extensively introduced, with every prospect of success.

An agricultural settlement was started under Government auspices at Kew, North Caicos, in 1882, to grow fruit for export, but has proved a failure, owing to the absence of any remunerative market for the produce. The soil elsewhere is totally unfit for agricultural purposes. Practically the whole of the food and household necessaries are imported. The commercial intercourse is almost wholly with the United States.

The inhabitants are of mixed European and African extraction, the proportion of whites to coloured people being larger than in most of the West Indies.

The following correspondence relates to the attempt which is being made to develop the cultivation of fibre plants.

ROYAL GARDENS, KEW, to COLONIAL OFFICE.

SIR, Royal Gardens, Kew, 21 February 1890.

I AM desired by Mr. Thiselton Dyer to acknowledge the receipt of your letter of the 17th inst., forwarding a copy of a despatch from the Governor of Jamaica together with a letter from the Commissioner of Turks and Caicos Islands on the subject of fibre plants.

2. The specimens of leaves mentioned by Captain Jackson have duly arrived at Kew and they have been carefully examined. The leaves marked A. and called "Pita" taken in conjunction with the specimen of fibre enclosed belong to the true Pita or Henequen of Yucatan (*Agave rigida* var. *sisalana*), and identical with the plants yielding the valuable fibre which has lately attracted so much attention at the Bahamas. The leaves marked D. are derived from the same species, but the leaves in this instance are furnished with a few teeth, a circumstance which often occurs in this and other species of Agave. The original wild plants of *Agave rigida* were plentifully supplied with teeth. The present unarmed varieties have been selected for cultivation as being more readily handled The three small living plants included with the leaves A. and D. were apparently true "Pita" plants.

3. The plant known locally as "Manila," marked B., but supposed by Captain Jackson, as expressed in his letter of the 22nd July, "to be "the Sacqui or Henequen of Yucatan, of lighter colour and having "thorns on the edge of the leaf and growing freely wild," is *Furcræa cubensis*. This is well distributed nearly everywhere in the West Indies, and is known in Jamaica, Tobago, and elsewhere as "Silk Grass." It is closely allied to the plant yielding Mauritius hemp. It yields a good fibre, but it cannot be regarded as so valuable a plant as the "Pita." Where this latter is plentiful already or easily obtainable in large quantities, it would not be desirable to devote attention entirely to the "Silk Grass."

4. It will be noticed that an examination of these specimens from the Turks Islands has proved very interesting. Captain Jackson has

rendered valuable service by drawing attention to the existence of the true "Pita" in these islands, and there is no reason why a very important fibre industry should not be established here. The identity of the Turks Islands "Pita" with that of the Bahamas is a fact that should alone suggest some steps being taken to improve the condition of the people in these Settlements.

I am, &c.

Sir R. G. W. Herbert, K.C.B. (Signed) D. Morris.

Colonial Office to Royal Gardens, Kew.

Sir, Downing Street, February 25, 1890.

I am directed by Lord Knutsford to acknowledge the receipt of your letter of the 21st instant, reporting on the specimens of fibre plants sent home by the Commissioner of Turks Islands, and to inform you that a copy of it has been transmitted to the Governor of Jamaica for communication to the Commissioner.

I am, &c.

The Director, (Signed) Robert G. W. Herbert.
Royal Gardens, Kew.

Sir, Downing Street, October 8, 1890.

I am directed by the Secretary of State for the Colonies to transmit to you, for your information, papers relating to botanical subjects in several West Indian Colonies.

I am, &c.

The Director, (Signed) Robert G. W. Herbert.
Royal Gardens, Kew.

The Commissioner, Turks Islands, to the Colonial Secretary, Jamaica.

(Turks Islands, No. 76.)

Sir, Grand Turk, August 19, 1890.

Having just returned from a tour of inspection round the whole of the Caicos Islands, during which I was able to visit all the lands lately taken up for fibre cultivation, I have the honour to submit to his Excellency the Governor a short report on the present prospects of this industry.

2. Leaving Grand Turk in a small schooner on the evening of the 5th instant, in company with Mr. Hance, the American Consul, we arrived early on the following day at the west point of East Caicos, better known as "Breezy Point." The island includes upwards of 25,000 acres, and is held on a lease, without rent, of 99 years, of which about 10 years only have expired. The original lessee died in March last, and his heirs have sub-let the property of Mr. J. D. Murphy, who represenrs a syndicate who are merely waiting for the passing of a Companies Act to register as a limited liability company.

3. At present, about two-thirds of the island is held as a cattle ranch, there being about 1,000 head on the island, and there is a

considerable quantity of cave earth (guano), about 200 tons of which has been stored, and was awaiting shipment at the time of my visit. The island contains from 15 to 20,000 acres suitable for the Pita (or Sisal) cultivation, and some 200 acres have already been cleared. The land, so far as I was able to judge from the written descriptions, of which I have a considerable number, is fully equal to the best land in Abaco, where such large sisal plantations are being established in the Bahamas, and it is far superior for this purpose to any land which I have seen in any other part of the Caicos. It is chiefly reddish-brown earth, freely interspersed with limestone rock, rich in phosphates, the fertilising power of which is amply attested by the luxuriant growth with which it is covered. The anchorage is safe and good for vessels up to 300 tons, and could easily be made available for larger craft by the removal of a few isolated coral patches.

4. The only obstacle to the assured and early success of the company, working this property, is the difficulty of obtaining sufficient plants of the right variety (*Agave rigida* var. *sisalana*), but it is one which I hope may be shortly overcome. At present, the company has the promise of sufficient plants to stock about 200 acres, but they are ready to clear 2,000 acres a year if plants can be had. The labour for this land is drawn from Grand Caicos, where, as reported in my letter No. 67 of the 22nd July 1889, there is no Government land available for the people, and they have hitherto been forced to hire land at exorbitant rents.

5. We were joined at Breezy Point by Mr. Leslie, the magistrate of the Caicos District, and, leaving there on the 7th instant, we proceeded to Lorimers, on Grand Caicos, to the fibre plantation leased by Mr. Hance. This property comprises about 1,000 acres, of which nearly one third has been planted out for some years in Pita. Unfortunately, no system was pursued in setting out the land, and the plants are in irregular lots among thick bush, and, in the six months he has held the land, Mr. Hance has made no effort to clear or arrange his plantation, but has confined himself to gathering the mature leaves. He assures me, however, that he intends at once to clear and plant out regularly, and has also promised to dispose of his surplus suckers to the lessees of Breezy Point.

6. Mr. Hance has erected a stone store and dwelling combined, and has put up a 10 horse-power vertical engine, capable of working 5 or 6 "Raspadores." At present he is only working one "Kennedy" machine, and the result is not satisfactory, though I have little doubt that this is greatly owing to the entirely unskilled labour at his command. During my visit, which extended over two days, he was extracting fibre from small and damaged leaves, for export as "paper fibre," but even these it was considered necessary to divide, before passing them through the wheel, and there was a loss of not less than 30 per cent. of fibre, the land on which the bagasse was put to dry being thickly covered to a depth of several inches with tangled fibre. Mr. Hance assures me that, in spite of this loss, he obtains an average amount of fibre of upwards of 4 per cent. of the weight of the leaves, which is all that is done by the Death and Ellwood wheels in Yucatan and the Bahamas. If this be so, then either the waste from the best machines at present in use must be equally extravagant, or else the peculiar soil of these islands must produce a leaf richer in fibre than has yet been grown. I am inclined to think that the latter is the case, to some extent at all events, as, at the next place visited, I found numbers of plants of the Manila or "Silk Grass" with strong, hard,

healthy leaves, 8 to 9 feet long, which is, I believe, far beyond the average.

7. The labour for Mr. Hance's lands is, like that for Breezy Point, drawn from Grand Caicos, including the villages of Lorimers, Bombarra, and Fergusons, but his plantation is so small that this will cause no difficulty. In fact, it will require both these farms to find work for these people, whose position has hitherto been a very pitiable one.

8. I had intended visiting the extensive though thinly populated settlement of Bottle Creek on North Caicos, where I am told there are numbers of Pita plants on private lands not yet worked, but the state of the weather made it dangerous to risk the passages of the reef, so, leaving Mr. Hance to return to Grand Turk in the schooner which had brought us, I took my own open boat and, starting at 9 a.m. on the morning of the 9th instant, and sailing across the Caicos Bank, reached Kew Settlement on North Caicos at 11 p.m. the same day, a very hot day's work under an August sun, across such shallow water.

9. At Kew there are no Pita plantations, nor is it desirable that there should be, as the land is richer than in any other part of the Caicos, and is required for, and should be, the market garden of the other Settlements. This year has been one of such intense drought that the corn crops had failed, but the root crops are so plentiful that we found but little distress among the people. It is this land that I surveyed last year and placed the people in possession of 25 acre lots, and I was able to lay out some fresh lots during this visit, as well as to survey some of the roads to "tie" the previous surveys.

10. I found at Kew about a couple of hundred Pita plants growing in places choked up by bush, so I had a suitable spot cleared, and the plants removed to this, and set out at regular intervals to form a Government nursery. It was here that I observed the large specimens of silk grass mentioned in paragraph 6 of this letter. These plants were introduced here in Jamaica in 1883–84 by Mr. Plummer, the Instructor in Agriculture, sent up by Mr. Morris at Mr. Llewelyn's request. They have certainly thriven marvellously, though, as far better results are obtained from the Pita, it is unlikely that we shall be able to put them to much practical use.

11. Our schooner having returned from Grand Turk, Mr. Leslie and I left on Thursday morning for West Caicos, the waste lands on which have been recently lease in accordance with the permission contained in your letter, No. 4269/6302, of the 28th ultimo. My visit was only for the purpose of forming an opinion as to the best means of surveying these lands at the least expense to the lessees, as I am most anxious to afford every possible encouragement to the new industry. Otherwise I should not undertake this work, as repeated absences from Grand Turk are very inconvenient, where the whole of the executive work is centred on the Commissioner, as it is since the abolition of the office of Crown Surveyor (Colonial Engineer), just before my arrival in 1885. Besides, the work of surveying over such very rough country, through thick bush, is most trying at this season, but there is no officer whom I can send, and to obtain the services of a surveyor from abroad would entail an expenditure which the lessees of the land are not prepared to meet. As the work is necessary for the success of the new industry, I have promised to do it, and propose to return there early next month.

12. That this island of West Caicos is suitable for the fibre cultivation is proved by the fact that in cutting the bush from the small portion of land which the company has been able to clear, since they were allowed to go to work a fortnight ago, several Pita plants in good

condition, and growing strongly, were found, which were before hidden in the bush, which is so thick as to be absolutely impassable. I found that the manager of the company had his house half built, and had some 30 acres of land in an advanced state of preparation, and he hopes to begin early in October to set out the plants, of which they have already upwards of 200,000. The labour for this property is drawn from Providence Caicos (Blue Hills), the poorest Settlement in these islands, and one in which it has hitherto been necessary to distribute provisions to the aged and infirm almost annually, a necessity which abundance of labour will entirely remove.

13. Having laid out the directions of the lines to be cleared for the survey, I left West Caicos in the night for Grand Turk, a beat dead to windward of 80 miles, much of it through very heavy seas. It took between three and four days to do, very weary and uncomfortable work in a small schooner, reeking of stale fruit and molasses, and swarming with cockroaches and other insects, and yet by far the best vessel obtainable here, and indeed the only safe one in heavy weather.

14. In conclusion, I may say that the result of my visit has been a conviction that the future of the fibre industry in the Caicos Islands is assured, if no useless obstacles or unnecessary restrictions be allowed to harass the companies now commencing operations. The land is in every way suitable, and the management of the companies possess energy, ability, and capital to direct them. The directors and shareholders are not speculators, but men whose fortunes are involved in the undertaking. Far beyond the success to individuals, however, is the improvement to the condition of the outlying Settlements, hitherto the home of want and distress. With ample, steady, well paid and congenial labour, always to be had for men, women, and children, for the nature of the industry provides occupation for all, a sufficient livelihood at least will be within reach of all who care to work, and it is not too much to hope that the near future may see a prosperous and contented community replace the half starved and not much more than half civilized "wreckers" whose names have been "a by-word and a fear" to many an unfortunate shipmaster, whose vessel has been swept by the strong and uncertain currents on to the reefs surrounding these cays.

I have, &c.
(Signed) H. Jackson,
Commissioner.